

**Concentration %
of Maximum**

- 10
- 20
- 30
- 40
- 50
- 60

U.S. EPA Environmental Response Team
Response Engineering and Analytical Contract
EP-C-04-032
W.A. #EAC00118

0 100 200 Meters

Source: Environmental

Map Creator: ERM/2003

Geographic Name: M-300 JN Zone 174

• ICF/ERM/2003
Map of the area of the M-300 JN Zone 174

DRAFT

FIGURE 1
WR Grace ISC Modeling
Concentration % of Maximum
March 2005
Dearborn, Michigan

US EPA RECORDS CENTER REGION 5



467449

233577 I.1
12/4/03

**SITE ASSESSMENT REPORT
FOR THE
N-FORCER SITE
DEARBORN, WAYNE COUNTY, MICHIGAN**

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region V Emergency Response Branch
9311 Groh Road
Grosse Ile, Michigan 48138

Prepared by

WESTON SOLUTIONS, INC.
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Suite 500
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Contract Number	68-W-00-119
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U.S. EPA On-Scene Coordinator	Brian Kelly

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Prepared by

Heather Schichtel
START Site Lead

Date

Approved by

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START Manager

Date

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SECTION 1

INTRODUCTION

The Weston Solutions, Inc. (WESTON®), Superfund Technical Assessment and Response Team (START) was tasked by the United States Environmental Protection Agency (U.S. EPA) On-Scene Coordinator (OSC), James Justice, to conduct a site assessment at the N-Forcer Site (N-Forcer) located in Dearborn, Wayne County, Michigan, under Technical Direction Document (TDD) S05-0212-001. This assessment was completed based on previous site visits that indicated potential contamination of asbestos in soil at the site. The analysis of the samples collected during the site assessment was completed under TDD S05-0212-002.

The purpose of this site assessment was to gather site-specific information from the N-Forcer Site to determine the necessity of completing a removal action. Specific objectives of the site assessment were to identify each of the following:

- The potential for human health impacts associated with contamination;
- The potential for adverse ecological effects associated with contamination;
- The potential for off-site contaminant migration; and
- Recommendations to U.S. EPA concerning the need for a removal action, further investigation, referral to other government agencies or U.S. EPA programs, or other actions that may be appropriate.

To accomplish these objectives, the site assessment consisted of:

- Reviewing site documentation, which included a Level I Environmental Site Assessment report written in 1992 by Engineering and Testing Services, Inc. (ETSI 1992); a Phase II closure report written in 2001 by Clayton Group Services, Inc. (Clayton 2001); and data provided by U.S. EPA;

- Performing a site reconnaissance; and
- Conducting investigative air and soil sampling.

This site assessment report is organized into the following sections.

- Section 1:** **Introduction** - Provides a brief description of the objective and scope of the site assessment activities.
- Section 2:** **Site Background** - Provides the site description, site history, and a summary of previous investigations.
- Section 3:** **Site Assessment Activities** - Describes the methods and procedures used during the site assessment activities.
- Section 4:** **Analytical Results** - Discusses the analytical results of samples collected during the site assessment.
- Section 5:** **Threats to Human Health and the Environment** - Summarizes the potential threats that may affect nearby residences/property owners and the surrounding environment.
- Section 6:** **Removal Cost Estimate** - Provides recommendations for a removal action and an estimated cost for the proposed removal action.
- Section 7:** **Conclusions and Recommendations** - Summarizes the findings of the site assessment activities and provides recommendations for further activities.
- Section 8:** **References** - Provides a list of references utilized in compiling the site assessment report.

SECTION 2

SITE BACKGROUND

2.1 SITE DESCRIPTION

The N-Forcer Site is a light-industrial facility located in a mixed residential, industrial, and recreational area in the city of Dearborn, Wayne County, Michigan. The facility is currently active and used by Die Mold Automation Components, a tool and die manufacturer. The site is located at 14300 Henn Avenue and consists of a 16,000-square-foot steel building with approximately 2,000 square feet of office space, located on a 2.7-acre parcel (Appendix A, Figure 1). There are two parking areas located east and south of the building. A CSX railroad line is located along the northern and eastern boundaries of the property. In 1992, Die Mold Automation Components, the neighboring facility to the west, expanded productions onto this property. The site is partially enclosed by a chain-link fence located north of the building.

2.2 SITE HISTORY

The facility was built in the late 1940s for the original occupants, National Siding, and was used to store manufactured steel siding materials. Zonolite, later purchased by W.R. Grace, and Co., occupied the building from the early 1950's until 1990, and operated an exfoliating plant for vermiculite ore from Libby, Montana. Zonolite manufactured attic insulation and lightweight concrete, and it is possible that asbestos-tainted vermiculite was used during manufacturing operations. A form of amphibole asbestos, referred to as Libby Amphibole (LA), may have been present in the ore, and, therefore, may have been present in the waste materials generated from the exfoliating process. During the period of time that Zonolite operated at the site, waste generated from the site operations (possibly containing LA) was stored inside the facility. Some waste may also have been stored outside the facility for loading, transportation, and disposal. Discussions with

former employees and U.S. EPA OSC James Justice indicate that waste, potentially containing LA,

may have been transported off site and used as fill material on residential properties.

In 1992, a Level I Environmental Site Assessment was performed by ETSI. A site reconnaissance was performed during the assessment, but no samples were collected. A confirmed release related to an underground storage tank was reported to the Michigan Department of Natural Resources (MDNR), and the ETSI site assessment indicated that the MDNR did not feel that a sufficient investigation was conducted to confirm that all contaminated soil had been removed from the site.

In 2000, a site visit conducted by the U.S. EPA did not result in recommendations for additional action based on the observed site conditions. On June 25, 2001, Clayton completed Phase II soil sampling activities at the site. Clayton reported that the sampling was conducted in accordance with the Resource Conservation and Recovery Act (RCRA) hazardous waste management unit (HWMU) Closure Work Plan (Clayton 2001).

In September 2002, representatives from the Agency for Toxic Substances and Disease Registry (ATSDR) conducted a follow-up site visit at the request of the U.S. EPA to evaluate the presence of vermiculite ore, stoner rock, and processed asbestos waste. During that visit, ATSDR observed vermiculite ore along the railroad spur that serviced the facility and in soil along the parking lot, and observed a suspicious dust in an old storage area for the stoner rock (OSC Justice 2003).

State and local officials requested assistance from the U.S. EPA to determine if the site qualified for a CERCLA-funded removal action. In January 2003, U.S. EPA tasked WESTON START to conduct a site assessment to determine the potential presence of LA in vermiculite products and waste produced by the former Zonolite facility and determine the possible basis for a removal action at the site.

SECTION 3

SITE ASSESSMENT ACTIVITIES

3.1 SITE RECONNAISSANCE

This section presents the activities conducted and procedures followed by START personnel in conducting the site assessment. START conducted soil and air sampling in accordance with a U.S. EPA-approved Site-Specific Sampling Plan (START 2003). The Site-Specific Sampling Plan specified that up to eight soil samples and two air samples would be collected during the site assessment. Based on actual field conditions encountered during the site assessment, seven soil samples and two air samples were collected.

On January 14, 2003, U.S. EPA OSC James Justice and START member Heather Schichtel conducted a preliminary site reconnaissance of the N-Forcer property. A safety meeting was conducted and hazards associated with the site were discussed. Prior to conducting the site reconnaissance, both personnel reviewed and signed the site Health and Safety Plan (HASP). The site reconnaissance was conducted to observe site conditions and identify appropriate sampling locations.

During the site reconnaissance, the following observations were made:

- The 14300 Henn Avenue property is an active facility. Vehicles were present in the parking area.
- The north side of the property was secured with a chainlink security fence, but the south, west, and east sides of the property were accessible to the public.
- Residential properties are located immediately south of the site.
- There is one existing building on the site.

3.2 SAMPLING ACTIVITIES

Immediately following the site reconnaissance, OSC Justice and START member Schichtel conducted the sampling. Photo documentation of the sampling is presented in Appendix C. Locations of samples collected during the site assessment are shown in Figure 2 in Appendix A.

3.2.1 Air sampling

START Schichtel set up the air sampling equipment at 0845 hours on January 14, 2003. Two air samples were collected during the site assessment and were identified with a WS prefix and a unique number identifier. Air sample WS-1 was collected at the northeast side of the work area within the equipment storage room of the site building, and air sample WS-2 was collected at the southwest corner of the work area inside the site building (Appendix A - Figure 2). Air samples were collected by drawing air through a 25 millimeter diameter mixed cellulose acetate three-piece cassette filter (0.45 micron pore size). The cassette was constructed with electrically conductive extension cowls to minimize electrostatic effects. Based on a toxicologist-selected analytical sensitivity of 0.001 structures per cubic centimeter (S/cc) and because dust levels were expected to be relatively low inside the building, the high-flow air sampling pumps were set at flow rates between 8 and 9 liters per minute (L/min) for an 8-hour period.

U.S. EPA Standard Operating Procedure (SOP) 2015 (Asbestos Sampling) and START SOP 807 (Asbestos Sampling) were followed during the collection of the air samples. Sample volumes and sample times are summarized along with the analytical results for each sample in Table 4-1 (Appendix B). Analytical results are discussed in Section 4.

3.2.2 Composite Soil Sampling

Composite soil samples were collected using a 5-point compositing technique, in accordance with START SOP 104: Surface Soil Sampling. In each given target area, five representative points were identified, and equal volumes of soil were collected from each point and combined in one sampling bag. Four composite samples were collected on the N-Forcer property and were identified as soil composite (SC) samples with unique number identifiers. Soil composite sampling locations are shown in Figure 2 in Appendix A.

Soil sample SC-1 was collected from a grass and dirt area north of the site building and south of the railroad spur. Soil sample SC-2 was collected from the east side of the eastern parking lot. The soil sampled in this area was soil from below the railroad tie retaining wall that appeared to have been washed off the parking lot and adjacent dirt areas. Soil sample SC-3 was collected from the area along the railroad spur and immediately west of the railroad spur, along the eastern side of the property. Soil sample SC-4 was collected from a grassy area between the trees lining the north side of Henn Avenue.

3.2.3 Grab Sampling

Grab samples were collected by removing soil/waste from a discrete single point. Three grab samples were collected during the site assessment and were identified as "GB" samples with a unique numerical identifier. Samples GB-1 and GB-2 were collected from bare soil areas where tremolite had been observed on a previous site visit and confirmed by the OSC and START during the site reconnaissance. Sample GB-1 was collected from the area downhill from the railroad spur at the southeast corner of property, and sample GB-2 was collected from a bare dirt area near the southwest corner of the east parking lot.

OSC Justice and START Schichtel observed exfoliated vermiculite insulation behind a slatted wall on the west side of the work area in the equipment storage room of the 14300 Henn Avenue

building. START Schichtel collected one waste sample (GB-3) of this material. The sample consisted of small-particles that appeared to contain fine pieces of silvery rock. Grab sampling locations are shown in Figure 2 in Appendix A.

3.3 SAMPLE ANALYSIS

Air samples were analyzed for asbestos by EMSL Analytical Laboratory in Plymouth, Minnesota, via Phase-Contrast Microscopy (PCM) using NIOSH Method 7400 (Issue 2, 4th Edition, August 15, 1994), and Transmission Electron Microscopy (TEM) using the Asbestos Hazard and Emergency Response Act (AHERA) Method (EPA 40 CFR Part 763 Final Rule). TEM air sampling results were compared to U.S. EPA Region V Removal Action Guidelines for tremolite asbestos. PCM air sampling results were compared to OSHA regulations but were not compared to U.S. EPA Region V Action levels for tremolite asbestos because of different units. Air sampling results are discussed in Section 4.1.

All composite and grab soil and waste samples were analyzed by EMSL Analytical Laboratory in Plymouth, Minnesota, via PLM using U.S. EPA Method 600/R-93/116 and TEM using EPA Method 198.4. TEM soil sampling results were compared to U.S. EPA Region V Removal Action Guidelines for tremolite asbestos. PLM soil sampling results were used to verify the TEM tremolite asbestos concentrations in the soil/waste.

3.4 SAMPLE HANDLING

Sample identification, documentation, and chain-of-custody procedures followed during the site assessment were in accordance with START SOP 101: Logbook Documentation, START SOP 102: Field Notes, and START SOP 103: Chain-of-Custody Documentation. Proper chain-of-custody was maintained during collection, storage, and transportation of all samples. Site assessment samples were shipped via overnight courier to EMSL Analytical Laboratory in Plymouth, Minnesota.

SECTION 4

ANALYTICAL RESULTS

Analytical results of samples collected during the site assessment are summarized in Tables 4-1 and 4-2. Copies of the laboratory analytical data sheets are provided in Appendix D. Seven soil/waste samples and two air samples were collected and analyzed for tremolite asbestos. The sample analyses were completed and reported in accordance with Level II data package deliverables. A discussion of the analytical results and comparison to regulatory standards is provided below.

To determine the magnitude of contamination posed by past operating practices at the N-Forcer Site, the analytical results were compared to U.S. EPA Region V Removal Action Guidelines used at comparable sites in Minneapolis, Minnesota, and U.S. EPA Region VIII removal standards used in Libby, Montana. The tremolite asbestos Removal Action Guidelines for U.S. EPA Region V, developed for a tremolite asbestos removal in Minneapolis, Minnesota, state that tremolite asbestos is considered a hazard to human health and the environment if there are:

- Visible tremolite rocks at the surface of the area of interest;
- 1% or greater asbestos in soil where tremolite is not visible; or
- More than 0.001 tremolite asbestos structures/cubic centimeter (S/cc) in the air.

All of the soil/waste samples collected from the N-Forcer Site (except sample SC-1) exceeded at least one of the above U.S. EPA Region V Removal Action Guidelines. One of the air samples collected inside the 14300 Henn Avenue building contained tremolite asbestos at levels above 0.001 S/cc.

4.1 Tremolite Asbestos Results

A summary of the tremolite asbestos analytical results as compared to Region V Removal Action Guidelines are provided in Appendix B, Tables 4-1 and 4-2. Sampling locations and results are also shown in Appendix A, Figure 2, "Asbestos Sampling Locations: Air and Soil". Photo

documentation of all sampling locations is presented in the Photo Log (Appendix C).

The contaminant of concern, tremolite asbestos, exceeded the U.S. EPA Region V Removal Action Guidelines in the following areas:

- Within the building, at the southwest corner of the equipment storage room, the air sample (WS-2) analytical results indicated that tremolite asbestos was present above the Region V Removal Action Guideline of <0.001 S/cc. The analytical results of the grab sample (GB-3) collected from this area indicate a tremolite asbestos concentration (6.9%) that exceeds the 1% Region V Removal Action Guideline.
- Four areas that qualify for removal action under the Region V Removal Action Guidelines because of visible tremolite rock included the following:
 - North of the building;
 - Along the eastern boundary of the property;
 - In the southeast corner of the property; and
 - By the southwest corner of the eastern parking lot.
- Analytical results for samples SC-3 (1.9% tremolite) and GB-1 (2.6% tremolite) collected outside of the building indicate an exceedance of the allowable levels of tremolite asbestos under the Region V Removal Action Guidelines.
- Samples SC-1, SC-2, SC-4 and GB-2 collected outside the building contained less than 1% tremolite asbestos; and, therefore, did not exceed Region V Removal Action Guidelines. However, according to the Region V Removal Action Guidelines, areas without visible contamination and sampling results of less than 1% must also be addressed during the removal if other areas on the property exceed Removal Action Guidelines.

SECTION 5

DISCUSSION OF POTENTIAL THREATS TO HUMAN HEALTH AND THE ENVIRONMENT

Conditions present at the N-Forcer Site would warrant an appropriate removal action as set forth in Section 300.415(b)(2) of the National Oil and Hazardous Substances Contingency Plan (NCP). The elevated levels of tremolite asbestos contamination in soil and waste on site exceed the U.S. EPA Region V Removal Action Guidelines.

After reviewing the analytical results of samples collected during the site assessment, EPA has determined that the following conditions exist at the N-Forcer Site, posing actual or potential immediate threats to the surrounding environment or the nearby human populations:

- **Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.**

The N-Forcer Site has a perimeter fence around part of the site area, but the rest of the property is accessible to the public. Analytical results of samples collected during the site assessment indicate that areas on site and near the boundaries of the property contain concentrations of tremolite asbestos in soil that exceed the Region V Removal Action Guidelines. In addition, there is potential that the asbestos contamination may have migrated off site (grab sample GB-1). There were also detectable levels of tremolite asbestos in at least one air sample collected from inside the building, which indicates that material within the building may also pose a threat to human health. Due to the areas of concern (areas immediately north of the building, in the east parking lot, the east side of the property, and the southeast corner of the property) and the nearby residential properties, the concentrations of tremolite asbestos found on site may warrant a removal action.

- **High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate.**

There were indications of tremolite asbestos in surface soils that may migrate off site based on the sample collected at the property boundary (grab sample GB-1). Preliminary sampling results indicate that areas on the boundaries of the property may be affected by tremolite asbestos contamination, and that asbestos-containing material (ACM) may have migrated off site. There is also testimony from former employees indicating that material may have

been taken off site and placed on residential properties (OSC Justice 2003), but this allegation was not further explored during the site assessment.

- **Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.**

Severe dry weather and wind may cause off-site migration of the tremolite asbestos in the surface soils near the property boundaries. Dry weather and winds may also cause contaminated surface soil particulate to become air borne, which may cause inhalation and ingestion hazards to the public and workers at the facility.

SECTION 6

REMOVAL COST ESTIMATE

The analytical results of samples collected during the site assessment document the presence of tremolite asbestos that exceeds the U.S. EPA Region V Removal Action Guidelines. Therefore, a removal action at the N-Forcer Site is recommended at this time. The extent of potential off-site contamination is uncertain and should be further evaluated. Projected costs of removal of tremolite asbestos in soils at residential properties off site could be determined after an extent of contamination assessment of off-site properties is conducted and have not been calculated at this time.

The development of cost estimates for a removal at the N-Forcer Site was based in part on costs incurred at similar U.S. EPA-lead removals, and assumes an estimated excavation depth of 6" to 12" in all impacted areas. The minimum excavation depth of 6" was determined by U.S. EPA toxicologists to be a relatively safe barrier; however, in areas of visible tremolite contamination, U.S. EPA Region V Removal Action Guidelines recommend excavation up to 18".

As a result of the relatively widespread amount of tremolite asbestos contamination identified at the N-Forcer Site, the removal cost estimate presented in Table 6.1 of Appendix B totals approximately \$398,690, and is based on the following assumptions:

- 30 days of removal site activities with 5 ERRS personnel; and
- One START member for 30 days; a second START member for 15 days, and Project Management support for 20 hours.

SECTION 7

CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

The N-Forcer Site, located at 14300 Henn Avenue, Dearborn, Wayne County, Michigan was historically used as a vermiculate processing facility from the 1950's to the late 1980's. The facility is currently operated by Die Mold Automation Components, a tool and die manufacturer. The site is located in a mixed residential, industrial, and recreational area of Dearborn. Private homes are located across Henn Avenue from the property. The U.S. EPA conducted a site assessment of the property on January 14, 2003.

The site is partially secured by a chain link fence but off-site migration of contamination and airborne fiber releases are possible. Visible tremolite contamination was observed along the southern and eastern boundaries of the property. Seven soil characterization samples and two air samples were collected and analyzed for asbestos. Based on the analytical results of samples collected during the site assessment, potential off-site migration of contamination and exposure of workers and local residents to LA from the N-Forcer Site may pose an immediate threat to human health and the environment.

7.2 RECOMMENDATIONS

Based on the conclusions of the site assessment, START recommends that a removal action be conducted at the N-Forcer Site. Analytical results of soil and air samples collected during the site assessment exceeded U.S. EPA Region V Removal Action Guidelines developed at similar U.S. EPA Superfund sites with tremolite contamination in Regions V and VIII.

START also recommends that nearby residential properties and former Zonolite employee's

properties be inspected and possibly sampled to evaluate potential tremolite asbestos contamination.

SECTION 8

REFERENCES

- Clayton Group Services, 2001. *Level II Site Assessment Report*.
- Engineering and Testing Services, Inc., 1992. *Level I Environmental Site Assessment Report*.
- Justice, J. 2003. Personal Communication with On-Scene Coordinator.
- United States Environmental Protection Agency (U.S. EPA), 1994. SOP 2015: Asbestos Sampling, Revision No. 0.0.
- U.S. EPA, 1987. Asbestos Hazard and Emergency Response Act (AHERA) Protocol. 40 CFR Part 763.
- U.S. EPA, 1998. National Oil and Hazardous Substances Contingency Plan, National Priorities List. 40 CFR 300.415.
- WESTON Solutions, Inc. (WESTON) Superfund Technical Assessment and Response Team (START), 2003. *Field Sampling and Analysis Plan*. Chicago, IL.
- WESTON START, 1996. *Compendium of START Standard Operating Procedures (SOP)*, SOP No. 101: Logbook Documentation. Delran, NJ.
- WESTON START, 1996. *Compendium of START Standard Operating Procedures*. SOP No. 102: Field Notes. Delran, NJ.
- WESTON START, 1996. *Compendium of START Standard Operating Procedures*. SOP No. 103: Chain-of-Custody Documentation. Delran, NJ.
- WESTON START, 1996. *Compendium of START Standard Operating Procedures*. SOP No. 104: Surface Soil Sampling. Delran, NJ.
- WESTON START, 1996. *Compendium of START Standard Operating Procedures*. SOP No. 807: Asbestos Sampling. Delran, NJ.

APPENDIX A

Figures

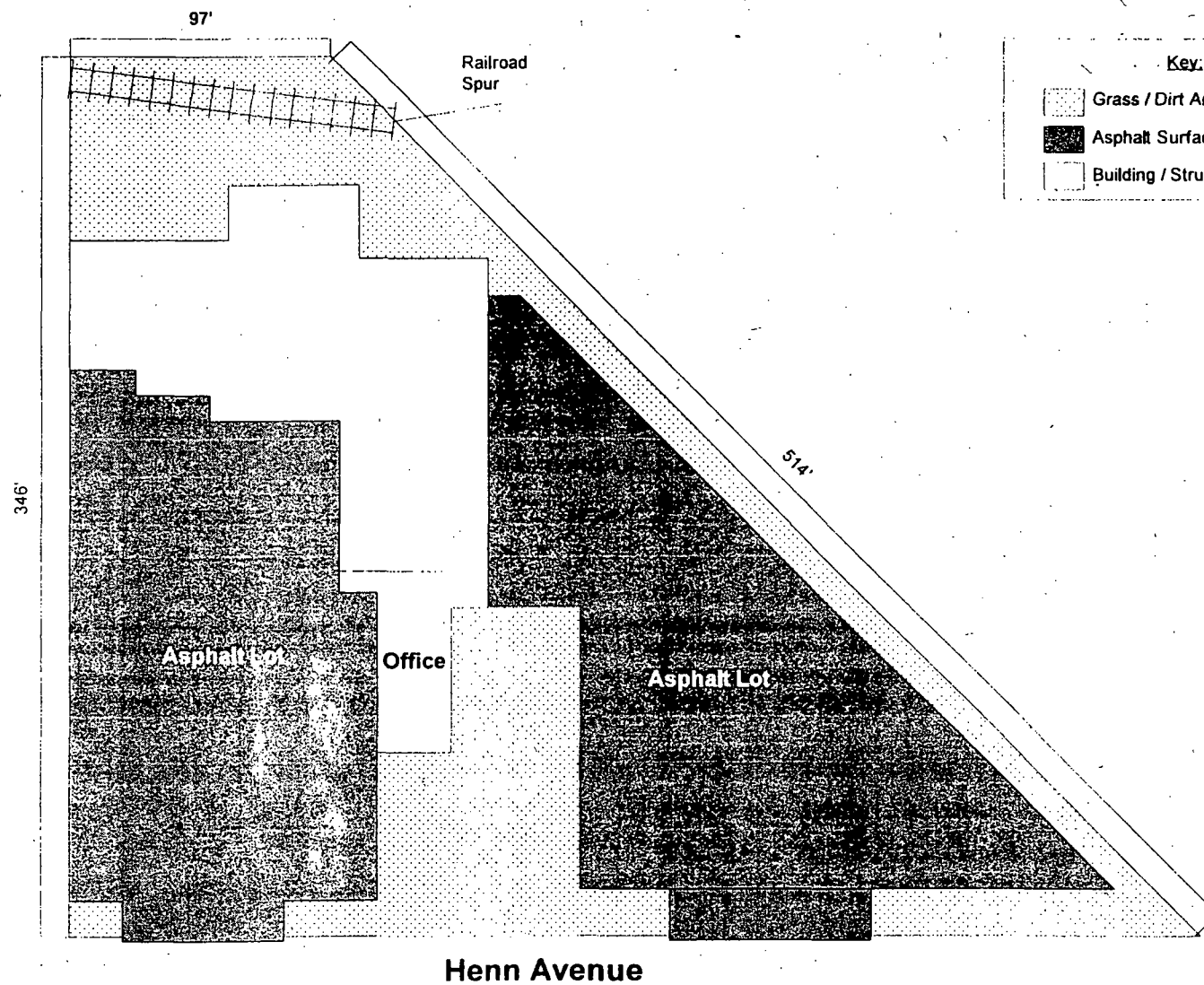


Figure 1

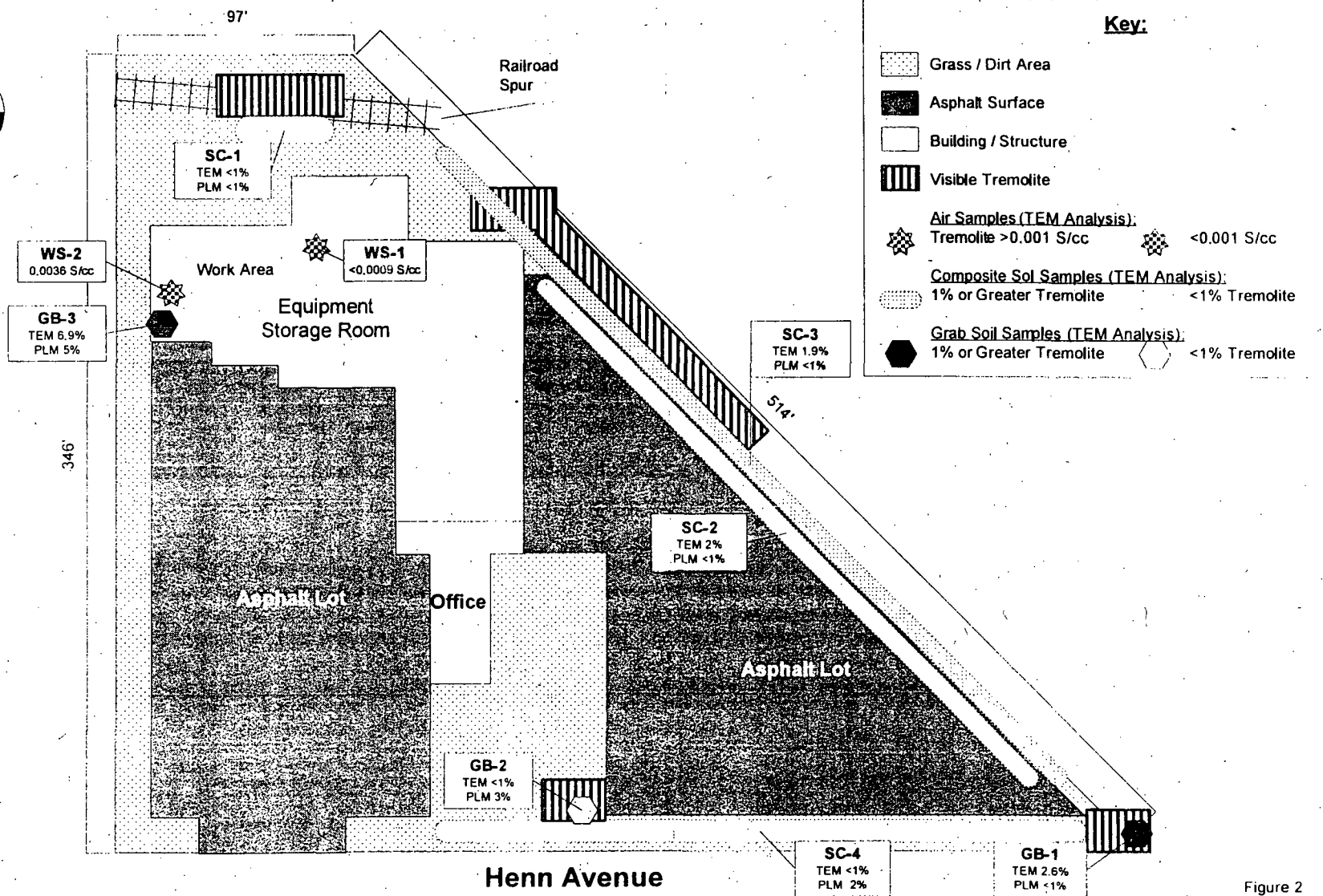


Figure 2

APPENDIX B

Tables

Table 4-1
Asbestos Air Sampling Results
N-Forcer Site, Dearborn, Michigan

Field Sample ID	WS-1	WS-2
Sample Date	01/14/03	01/14/03
Sample Start Time	08:37	08:46
Sample Volume (Liters)	4155.54	4129.29
Tremolite (S/cc) <i>AHERA TEM Analysis</i> ¹	0.0036	<0.0009
Asbestos (f/cc) <i>PCM Analysis</i> ²	0.002	0.003

f/cc - Fibers per cubic centimeter.

S/cc - Structures per cubic centimeter.

Highlighted cells indicate values that exceed EPA Region V Removal Action Guideline of 0.001 S/cc.

¹ Transmission Electron Microscopy utilizing the AHERA Method (EPA 40 CFR Part 763 Final Rule).

² Phase-Contrast Microscopy utilizing the NIOSH Method 7400 (Issue 2, 4th edition, August 15, 1994). Analysis was done to compare with OSHA regulations, but cannot be compared to EPA Region V Removal Action Guidelines because of the different units.

Table 4-2
Asbestos Soil Sampling Results
N-Forcer Site, Dearborn, Michigan

Field Sample ID	SC-1	SC-2	SC-3	SC-4	GB-1	GB-2	GB-3
Sample Date	01/14/03	01/14/03	01/14/03	01/14/03	01/14/03	01/14/03	01/14/03
Sample Time	09:10	09:30	09:40	10:15	9:50	10:05	10:25
Sample Type	Composite	Composite	Composite	Composite	Grab	Grab	Grab
Tremolite (% asbestos) <i>PLM Analysis</i> ¹	<1%	2%	<1%	2%	<1%	3%	5%
Tremolite (% asbestos) <i>TEM Analysis</i> ²	<1%	<1%	1.9%	<1%	2.6%	<1%	6.9%

% asbestos - Structures per cubic centimeter

Highlighted cells indicate values that exceed EPA Region V Removal Action Guidelines of 1% asbestos in soil.

¹ Polarized Light Microscopy utilizing the EPA-approved Methodology 600/R-93-116

² Transmission Electron Microscopy utilizing the ELAP 198.4 Method

APPENDIX C

Photo Log

APPENDIX D

Analytical Results and Data Validation

EMSL Analytical, Inc.

14375 23rd Avenue North
Minneapolis, MN 55447

Phone: (763) 449-4922 Fax: (763) 449-4924



Attn.: Linda Korubka
Weston Solutions, Inc.
2501 Jolly Road
Suite 100
Okemos, MI 48864

Friday, January 17, 2003

Ref Number: MN03127

POLARIZED LIGHT MICROSCOPY (PLM)

Performed by EPA 600/R-93/116 Method*

Project: N-Forcer 12634-001-001-0323 COC#0001

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	%	Fibrous % Non-Fibrous
SPT-011403-SC1	Site Characterization #1	Tan/Gold/Brown Non-Fibrous Heterogeneous	Teased/Crushed	< 1%	Tremolite Actinolite	< 1%	Cellulose 90% Mica 10% Other
SPT-011403-SC2	Site Characterization #2	Brown Non-Fibrous Heterogeneous	Teased/Crushed	2%	Tremolite Actinolite	< 1%	Cellulose < 1% Mica 98% Other
SPT-011403-SC3	Site Characterization #3	Brown Non-Fibrous Heterogeneous	Teased/Crushed	< 1%	Tremolite Actinolite	< 1%	Cellulose 5% Mica 95% Other
SPT-011403-SC4	Site Characterization #4	Brown Non-Fibrous Heterogeneous	Teased/Crushed	2%	Tremolite Actinolite	< 1%	Cellulose < 1% Mica 98% Other
SPT-011403-GB1	Grab Sample #1	Brown Non-Fibrous Heterogeneous	Teased/Crushed	< 1%	Tremolite Actinolite	< 1%	Cellulose < 1% Mica 100% Other
SPT-011403-GB2	Grab Sample #2	Brown Non-Fibrous Heterogeneous	Teased/Crushed	3%	Tremolite Actinolite	2%	Cellulose < 1% Mica 95% Other

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "% of Layers" refers to number of separable subsamples.

* NY samples analyzed by ELAP 198.1 Method.

Jodie Bourgerie

Jodie Bourgerie
Analyst

Rachel Inman

Approved
Signatory

Disclaimer: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. These negative PLM results cannot be guaranteed. EMSL suggests that samples reported as 1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

Analysis performed by EMSL Minneapolis (NVLAP Air and Bulk #200019.0.)

EMSL Analytical, Inc.

14375 23rd Avenue North
Minneapolis, MN 55447

Phone: (763) 449-4922 Fax: (763) 449-4924



Attn.: Linda Korubka
Weston Solutions, Inc.
2501 Jolly Road
Suite 100
Okemos, MI 48864

Friday, January 17, 2003

Ref Number: MN03127

POLARIZED LIGHT MICROSCOPY (PLM)

Performed by EPA 600/R-93/116 Method*

Project: N-Forcer 12834-001-001-0323 COC#0001

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	%	Non-Fibrous
SPT-011403-GB3	Grab Sample #3	Tan/Gold Fibrous Heterogeneous	Tessed/Crushed	5%	Tremolite Actinolite	None Detected	95% Mica < 1% Other

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

* NY samples analyzed by ELAP 198.1 Method.

Jodie Bourgerie
Analyst

Approved
Signatory

Disclaimer: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

Analysis performed by EMSL Minneapolis (NVLAP Air and Bulk #200019-0.)

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Attention: Linda Korubka
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Friday, January 17, 2003

Reference Number: MN03128

Analysis of New York State NOB's Performed by Transmission Electron Microscopy (TEM) ELAP 198.4 Method*

Project: 12634-001-001-0323 N-Forcer COC #0001

Sample ID	Sample Description	Sample Color	Weight of Organic Materials	Weight of Inorganic Materials	Analysis Method	Result
SPT-011403-SC1	Site Characterization #1	Brown	28.4	0.1	Tremolite	<1.0
SPT-011403-SC2	Site Characterization #2	Brown	27.1	10.7	Tremolite	<1.0
SPT-011403-SC3	Site Characterization #3	Brown	34.4	3.1	Tremolite	1.9
SPT-011403-SC4	Site Characterization #4	Brown	23.0	3.9	Tremolite	<1.0
SPT-011403-GB1	Grab Sample #1	Brown	32.0	2.4	Tremolite	2.6
SPT-011403-GB2	Grab Sample #2	Brown	31.1	4.2	Tremolite	<1.0
SPT-011403-GB3	Grab Sample #3	Brown	6.0	1.9	Tremolite	6.9

Dana Johnson
Analyst

Rachel Brown
Approved Signatory

*Results near 1% are not reliable by this method and a more accurate SEM method is recommended.

**To ensure results, EMSL recommends the use of SEM as a quality control measure. Without SEM QC the current diagnosis error rate for TEM/NOB and TEM/Chatfield occurs at a frequency of approximately 1-2% of samples analyzed. Without SEM QC, EMSL is not responsible for errors which could have been prevented with SEM QC.

NVLAP# 200019-0

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Ref Number: MN03129
Analysis Date 1/18/03

PHASE CONTRAST MICROSCOPY (PCM) FIBER COUNT BY NIOSH METHOD 7400, ISSUE 2, 4TH EDITION, 8/15/94

Project: N-Forcer 12834-001-001-0323 COC#0001

Sample	Location	Sample Date	Volume (liters)	Fibers	Fields	Fibers/ mm ²	LOD fib/cc	Fibers/cc
ATP-011403- WS1 HHID#778, EOC		1/14/03	4155.64	20.0	100	25.48	0.001	0.002
ATP-011403- WS2 HHID#778, EOC		1/14/03	4129.29	22.5	100	26.66	0.001	0.003

Daria Gordhamer

Analyst

Rachel Travis

Approved
Signatory

Disclaimer: LOD = Limit of Detection. This method assumes the limit of detection is 7 fibers/mm². The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. This report relates only to the samples reported above. This report may not be reproduced, except in full, without written approval by EMSL.

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Ref Number: MN03130

Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by EPA 40 CFR Part 763 Final Rule (AHERA)

Project: N-Forcer 12834-001-001-0323 COC#0001

Sample ID	Volume (liters)	Asbestos Type(s)	# STRUCTURES			Area Analyzed (mm ²)	Analytical Sensitivity (f/cc)	Asbestos Concentration	
			> 0.5µ < 5µ	≥ 5µ	Non- Asbestos			(f/mm ²)	(f/cc)
ATP-011403- WS1 HHID#778, EOC	4155.54	Tremolite Actinolite	1	3	2	0.1032	0.0009	38.76	0.0038
ATP-011403- WS2 HHID#778, EOC	4129.29	None Detected			0	0.1032	0.0009	<9.69	<0.0009

Daria Gordhamer
Analyst

Rachel J. Lewis
Approved
Signatory

Disclaimer: This laboratory is not responsible for data reported in structures/cc, which is dependent on volume collected by non-laboratory personnel. This laboratory is only responsible for data reported in structures/mm². This report may not be reproduced, except in full, without written approval by EMSL. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. This report relates only to the samples reported above. Quality control data (including 95% confidence limits and laboratory and analysts' accuracy and precision) is available upon request.

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